

#### ABSTRACT OF THE DISCLOSURE

The problem of the present invention is to provide an SPM capable of improving stability of operation when measuring various physical quantities and improving measurement sensitivity, reproducibility of measurement values and quantitativity by providing a system capable of optimally controlling a  $Q$  value in the vicinity of resonance of a cantilever under changing environmental conditions with a dynamically driven SPM. In order to achieve this object, a dynamically driven SPM of the present invention comprises extraction means for extracting speed from a vibration detection signal of a cantilever, a variable amplifier for adjusting gain of the signal, and an adder for superimposing an output signal of the variable amplifier with an output signal of an oscillator normally occurring in a dynamically driven method for forcing a cantilever to be oscillated by piezoelectric means etc. and is provided with a function for controlling  $Q$  in the vicinity of resonance of the cantilever by adjusting the gain of the variable amplifier so as to set  $Q$  to an optimum value.